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| 10/618,737 | 07/15/2003 | Robert A. Kagy | 8350.3158 | 7261 |
| 7590 01/04/2005 Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P. 1300 I Street, N.W. Washington, DC 20005-3315 | | | EXAMINER CHANG, CHING | |
| | | | ART UNIT 3748 | PAPER NUMBER |

DATE MAILED: 01/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/618,737

Applicant(s) *vn*

KAGY ET AL.

Examiner

Ching Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/12/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This Office action is in response to the amendment filed on November 12, 2004. Claim 10 is cancelled, and new claims 31-38 are added as requested.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-9, and 11-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

More specifically, in claim1 the language of “ enabling the valve actuator to implement a variation on conventional engine valve actuation timing in response to one of the first and second temperatures being above a predetermined value; and limiting an amount of fuel injected into a cylinder of the engine when the other of the first and second temperatures is below a predetermined value “ is deemed to be new matter in that it was inserted into a claim subsequent the filing of the instant application. Regarding claim 12, “ a

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controller adapted to engage the valve actuator with the intake valve when one of the first and second temperatures is above a predetermined value and to limit an amount of fuel injected into a cylinder of the engine when the other of the first and second temperatures is below a predetermined value " is deemed new matter for the reason cited previously. Furthermore, regarding claim 18, " a controller adapted to engage the valve actuator with the intake valve when one of the first and second temperatures is above a predetermined value, to limit an amount of fuel injected into the cylinder of the engine when the other of the first and second temperatures is below a predetermined value " is deemed new matter for the reason cited previously. Furthermore, regarding claim 25, " to engage the valve actuator with the intake valve when one of the first and second temperatures is above a predetermined value and to limit an amount of fuel injected into a cylinder of the engine when the other of the first and second temperatures is below a predetermined value " is deemed new matter for the reason cited previously.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. ***Claims 1, 3-5, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawai (JP '795).***

Kawai discloses a method of controlling (through ECU 26) an engine having a valve actuator (20), comprising: sensing (24) a first parameter indicative of a first temperature of the engine, sensing (step 101 in Fig. 2; step 301 in Fig. 7) a second parameter indicative of a second temperature of the engine, enabling (through ECU 26) the valve actuator to implement a variation on conventional engine valve (27) actuation timing in response to one of the first and second temperatures being above a predetermined value (Step 102 in Fig. 2; step 201 in fig. 201; step 302 in Fig. 7); and limiting an amount of fuel injected into a cylinder of the engine when the other of the first and second temperatures is below a predetermined value (See Figs. 2, 3, and 7); wherein the first temperature is an engine coolant temperature and the second temperature is an intake manifold temperature (See Fig. 1); further including enabling the valve actuator when the engine coolant temperature is above the predetermined value and the intake manifold temperature is below the predetermined value (See Figs. 2, 3, and 7); further including disabling the valve actuator when the engine coolant temperature is below the predetermined value; and further enabling a valve operation to detection system (through ECU 26) to monitor the operation of the valve actuator to determine proper operation of the valve actuator, when at least the coolant temperature is above a predetermined value.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. ***Claims 2 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai (as applied to claim 1 above) in view of Ashida (US Patent 6,640,758).***

Kawai further discloses the invention including enabling a valve operation detection system to monitor the operation of the valve actuator to determine proper operation of the valve actuator (through ECU 26).

Kawai, however, fails to disclose of ceasing to limit the amount of fuel to be injected in response to each of the first and second temperatures being above a predetermined value.

The patent to Ashida on the other hand, teaches that it is conventional in the engine valve actuator control art, to utilize a control method (See Fig. 3) of changing the valve timing of a valve actuator (VCT) in response to each of the first (TW) and second (TINT) temperatures being above a predetermined value (Th), in order to adjust the engine power output properly.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the control method including the

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criteria of each of the first and second temperatures being above a predetermined value for the valve actuator as taught by Ashida in the Kawai method, since the use thereof would provide an improved control method for an engine with a better fuel economy.

7. *Claims 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai (as applied to claim 1 above) in view of design choice.*

Kawai discloses the invention, however, fails to disclose the predetermined value is 20° C.

It would have been obvious to one having ordinary skill in the art at the time the invention was made, as a matter of design choice, to have selected a predetermined temperature at 20° C for the reference temperature depending on the coolant temperature in the Kawai method, since the use thereof would provide a more flexible control strategy for a valve actuator in an engine.

8. *Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai (as applied to claim 1 above) in view of Hu (US Patent 5,537,976).*

Kawai discloses the invention, however, fails to disclose the said control method including closing a control valve to enable the valve actuator.

The patent to Hu on the other hand, teaches that it is conventional in the engine valve actuator control art, to utilize a control method including closing a control valve (52) to enable a valve actuator (50, 58).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the control method including closing a control valve to enable the valve actuator as taught by Hu in the Kawai method, since the use thereof would provide a more flexible control method to actuate a valve actuator.

9. ***Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai (as applied to claims 1, and 8 above) in view of Kakuho (US Patent 6,718,957).***

Kawai discloses the invention, however, fails to disclose to limit the fuel injected amount or the torque generated amount when the engine is not properly operated or one of the measured temperatures is below the predetermined value.

The patent to Kakuho on the other hand, teaches that it is conventional in the art of an engine control, to utilize a controller (10) to limit the fuel injected amount (110, 182) or the torque generated amount (180, 170) when the engine is not properly operated or one of the measured temperatures (150, 154) is below the predetermined value (See Col. 8, line 61 through Col. 20, line 10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the control strategy on limiting the fuel injected and torque generated as taught by Kakuho in the Kawai method, since the use thereof would provide an improved engine control strategy with a proper engine power output.

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10. ***Claims 12-30, 34, 36, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu (US Patent 5,537,976) in view of Kawai (JP '795), and further in view of Ashida (US Patent 6,640,758)***

Hu discloses an engine (10) system, comprising, an engine block defining a cylinder, a piston slidably disposed within the cylinder, the piston moveable between a top dead center position and a bottom dead center position; a valve actuation system for an engine having an intake valve (30) moveable between a first position where the intake valve prevents a flow of fluid and a second position where the intake valve allows a flow of fluid, comprising a valve actuator (50, 58) adapted to selectively engage the intake valve to prevent the intake valve from returning to the first position; a controller (100) adapted to receive signals and to engage the valve actuator with the intake valve; further including a control valve (52) moveable between a first position where the valve actuator is enabled and a second position where the valve actuator is disabled, further including a detection system (100, 102) adapted to determine whether the valve actuator is operating properly; and further including a cam assembly (40, 42a, 42b) connected to the intake valve and adapted to move the intake valve between the first and second positions.

Hu, however, fails to disclose the controller being adapted to control the valve actuator and a fuel injection system based on two temperature signals.

The patent to Kawai on the other hand, teaches that it is conventional in the engine control art, to utilize a controller adapted to engage a valve actuator (20), to limit an amount of fuel injected into the cylinder of the engine when

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engine coolant temperatures above a predetermined value, and intake manifold temperatures is below a predetermined value (See Figs. 2 and 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the controller as taught by Katsuhiko in the Hu device, since the use thereof would provide an improved engine system having an effective control on both engine valve and fuel consumption.

The modified Hu device, however, fails to disclose the said controller being adapted to cease the limit of injected fuel when each of the engine coolant temperature and the intake air temperature being above a predetermined value.

The patent to Ashida on the other hand, teaches that it is conventional in the engine valve actuator control art, to utilize a controller (3) to change the valve timing of a valve actuator (VCT) when each of the engine coolant temperature (TW) and intake air temperature (TINT) being above a predetermined value (Th), in order to adjust the engine power output properly.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the controller as taught by Ashida in the modified Hu device, since the use thereof would provide an improved engine system with a better fuel economy.

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11. ***Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai (as applied to claim 1 above) in view of (JP '641).***

Kawai discloses the invention, however, fails to disclose a fault condition being generated when both the first and second temperatures are above the predetermined value and an improper valve operation being detected.

The patent to Akira on the other hand, teaches that it is conventional in the fuel injection control device art, to utilize a fuel injection control method (through 16, 164) including detecting a fault condition of an improper operation of a fuel injector (8), when temperature sensors (15, 18) have abnormality.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the control method with a fault condition detection as taught by Akira in the Kawai method, since the use thereof would provide a more precise control method for a valve actuator on fuel injection.

12. ***Claims 33, 35, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu in view of Kawai (JP '795), further in view of Ashida (as applied to claims 12, 18 and 25), and further in view of Akira (JP' 641)***

The modified Hu device discloses the invention, however, fails to disclose a fault condition being generated by the controller when both the first and second temperatures are above the predetermined value, and an improper valve operation being detected.

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The patent to Akira on the other hand, teaches that it is conventional in the fuel injection control device art, to utilize a controller (through 16, 164) to detect a fault condition of an improper operation of a fuel injector (8), when temperature sensors (15, 18) have abnormality.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the controller as taught by Akira in the modified Hu method, since the use thereof would provide an improved engine system with a better control on fuel injection in an operation.

13. *Claims 1, 3-5, and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu (US Patent 5,537,976) in view of Kawai (JP '795).*

Hu discloses a method of controlling (through 100) an engine having a valve actuator (20), comprising: enabling the valve actuator (50, 58) to implement a variation on conventional engine valve (30) actuation timing in response the sensor signals received; further including closing a control valve (52) to enable the valve actuator.

Hu, however, fails to disclose the control method including the sensor signals from engine coolant temperature and the intake air temperature, and fuel injection amount being limited depending on the temperature sensor signals.

The patent to Kawai on the other hand, teaches that it is conventional in the fuel injection control art, to utilize a control method to limit the fuel injection amount when engine coolant temperature (step 102; step 302) being above a

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predetermined value, and air intake temperature (step 101; step 301) being below a predetermined value.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the control method to limit the fuel injection amount depending on the engine coolant temperature and the air intake temperature as taught by Kawai in the Hu method, since the use thereof would provide a more compressive control method on a valve actuator movement, and a better control of engine fuel consumption.

14. *Claims 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hu in view of Kawai (as applied to claim 1 above) in view of design choice.*

The modified Hu method discloses the invention, however, fails to disclose the predetermined value is 20° C.

It would have been obvious to one having ordinary skill in the art at the time the invention was made, as a matter of design choice, to have selected a predetermined temperature at 20° C for the reference temperature depending on the coolant temperature in the Kawai method, since the use thereof would provide a more flexible control strategy for a valve actuator in an engine.

15. *Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu in view of Kawai (as applied to claims 1, and 8/3 above), and further in view of Kakuho (US Patent 6,718,957).*

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The modified Hu method discloses the invention, however, fails to disclose to limit the fuel injected amount or the torque generated amount when the engine is not properly operated or one of the measured temperatures is below the predetermined value.

The patent to Kakuho on the other hand, teaches that it is conventional in the art of an engine control, to utilize a controller (10) to limit the fuel injected amount (110, 182) or the torque generated amount (180, 170) when the engine is not properly operated or one of the measured temperatures (150, 154) is below the predetermined value (See Col. 8, line 61 through Col. 20, line 10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the control strategy on limiting the fuel injected and torque generated as taught by Kakuho in the modified Hu method, since the use thereof would provide an improved engine control strategy with a proper engine power output.

Response to Arguments

16. Applicant's arguments with respect to claims 1-30 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ching Chang whose telephone number is (571)272-4857. The examiner can normally be reached on M-Th, 7:00 AM -5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571)272-4859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent Examiner



Ching Chang



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